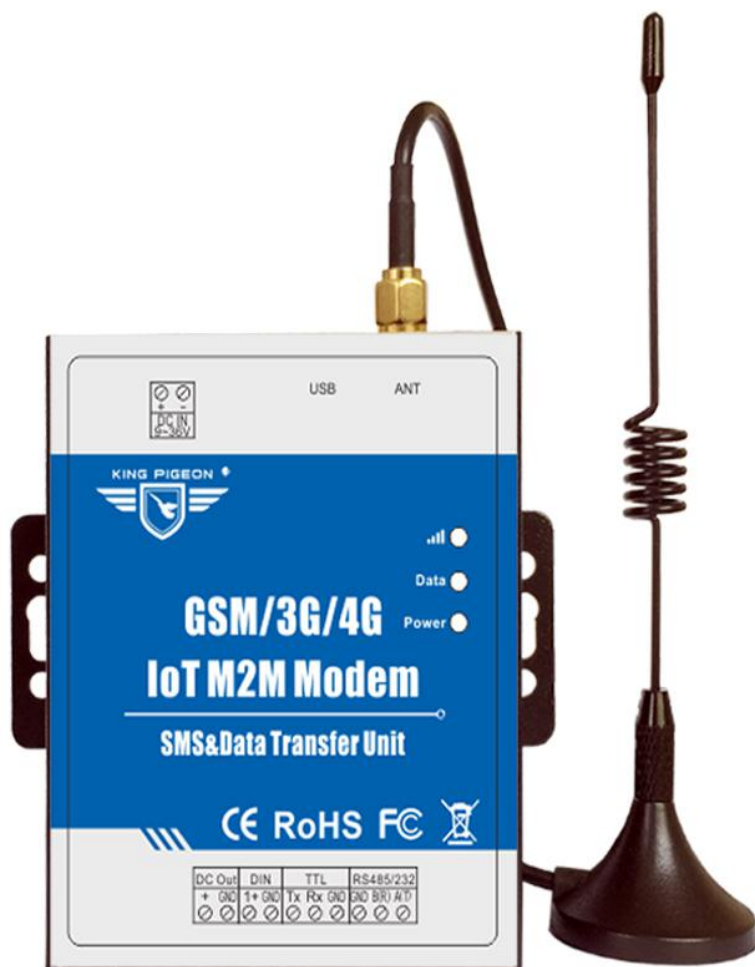


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# GSM SMS/GPRS/3G/4G IOT M2M Modem DTU



Data Sheet

Ver 1.0

D222/D223

Date Issued: 2017-06-12

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# GSM/GPRS/3G/4G IOT M2M Modem DTU

## 1. Brief introduction

The GSM/GPRS/3G/4G IOT M2M Modem is a powerful and programmable multi-purpose wireless cellular modem and data transfer unit (DTU). It embedded high reliable 32bit ARM9 MCU and industrial GSM/GPRS/3G/4G Cellular Engine inside. It provides a secure, high speed, reliable wireless data transmission between com port and internet connection for customers over GPRS/3G/4G wireless cellular network. Also, it can be used as SMS modem and Modbus RTU to Modbus TCP converter.

Moreover, it is suitable for transparent transferring SMS text between mobile phone, computer and RS232/RS485/TTL Serial port over GSM/3G/4G wireless cellular network. It can be used as SMS modem supports transparent transferring SMS, AT Commands, and provides 1 digital input can be used as SMS Alarm and Pulse Counter Alarm, too.

The GPRS/3G/4G wireless cellular communication has become widely used of industrials and utilities and many customers are requiring reliable, flexible and cost-effective data channel to build their information system. Many applications such as Remote device monitoring, remote automatic metering system, ATM, data logging system, POS, SCADA and surveillance system will require data channels covered all country.

The GSM/GPRS/3G/4G IOT M2M Modem is an ideal solution for factory automation, environmental monitoring and remote device management for M2M industry. Meanwhile, it is supplied with simple and user friendly PC Configurator to configuration, easy to installation.

**Model List Table**

Model No.	Applications	Serial Port	DIN
D222	AT Command SMS Transparent transfer, DIN or Pulse Counter monitoring.	USB,TTL,RS485 or RS232	1 Digital inpupt, Can be used as DIN monitoring and Pulse counter SMS Alarm.
D223	AT Command SMS Transparent transfer, DIN or Pulse Counter monitoring. Data Transparent Transfer, Modbus RTU to Modbus TCP Converter	USB,TTL,RS485 or RS232	1 Digital input, Can be used as event trigger the Modem online and Can be used as DIN monitoring and Pulse counter SMS Alarm.

**Notice:**

1. Default is GSM/GPRS Module inside, 3G/4G Module is optional;
2. Default is TTL+RS485 Serial Port, RS232 is optional.
3. The D223 include all of the D222's functions, but the D222 hasn't Data Transparent Transfer and

## The GSM/GPRS/3G/4G IOT M2M Modem working Diagrams:

### ● Used as SMS Modem Working Diagram



E.g.: Use PC or Computer send AT Commands to broadcast SMS to mobile phone or SMS Controllers or other SMS Devices for remote control or message push purpose.

### ● Used as SMS Transparent Transfer Working Diagram



E.g.: Use mobile phone to control special device or read meter via SMS. So send the PLC's or meter's Commands by SMS to the PLC or Meter, like Modbus RTU Commands. After the PLC or meter response data to serial port, the D222 will forward to Mobile phone by SMS.

### ● Used as DIN or Pulse Counter Alarm Working Diagram



E.g.: Use for monitoring 1 digital input or pulse counter, while active or the counter reach the preset value, will send SMS to users' mobile phone.

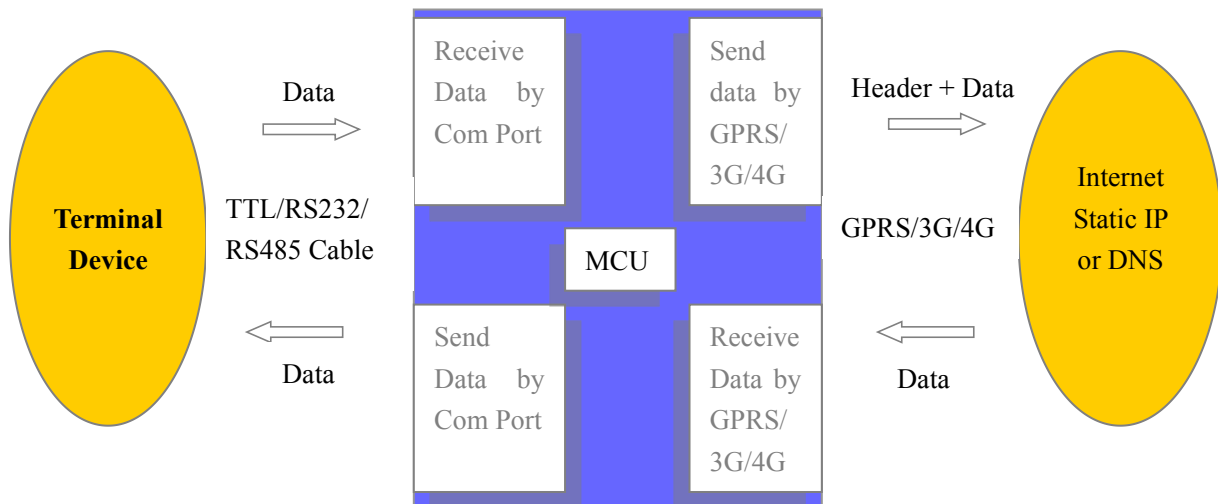
## ● Used as Data Transparent Transfer Working Diagram



E.g.: Use for transmitting data between internet server and remote smart meters, PLC, Data Acquisition Modules, instruments and so on, perform as DTU and Modbus RTU to Modbus TCP Converter function.

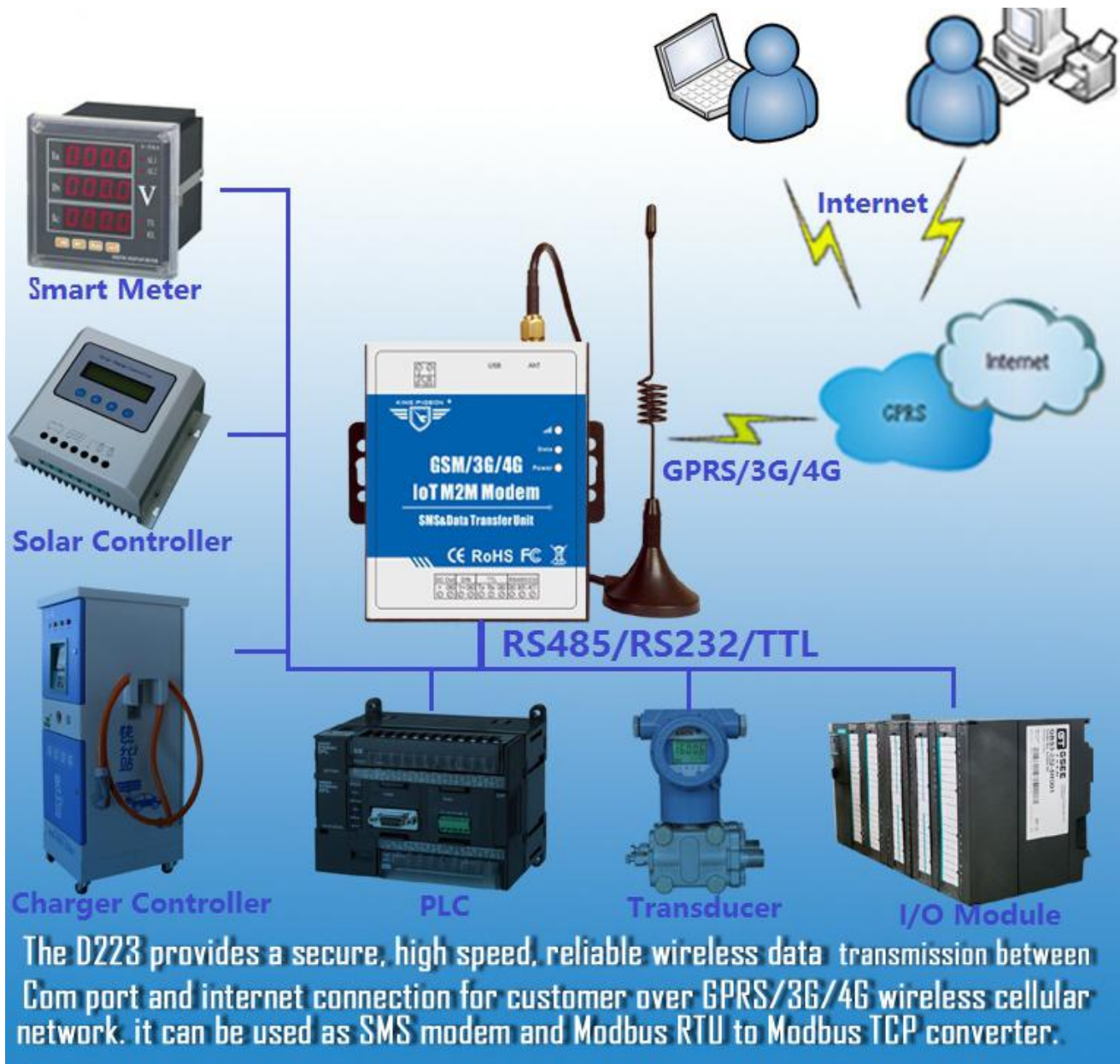
### **How Does the GSM/GPRS/3G/4G IOT M2M Modem works?**

The GSM/GPRS/3G/4G IOT M2M Modem with dynamic IP address, if you want to create the connection between the server and GSM/GPRS/3G/4G IOT M2M Modem, must using call, SMS or Com port to activate the GSM/GPRS/3G/4G IOT M2M Modem online firstly. Then the GSM/GPRS/3G/4G IOT M2M Modem will create the connection to the Server to build the tunnel, so the server can communicate to the GSM/GPRS/3G/4G IOT M2M Modem. The GSM/GPRS/3G/4G IOT M2M Modem with the heartbeat, it can keep the connection tunnel online all the time. Once the connection disconnected, the GSM/GPRS/3G/4G IOT M2M Modem will auto redial to create the connection. The server must with static IP address or DNS.



Under TCP/UDP mode, when the data length exceeds a fixed length or within the fixed time no new data received, the GSM/GPRS/3G/4G IOT M2M Modem will start to process the received data, packing the data then send to the specified IP address and Port or DNS and Port. Or unpack the data packets from the internet then transfer to the com port according to the baud rate.

The GSM/GPRS/3G/4G IOT M2M Modem suitable for below applications:



The D223 provides a secure, high speed, reliable wireless data transmission between Com port and internet connection for customer over GPRS/3G/4G wireless cellular network. it can be used as SMS modem and Modbus RTU to Modbus TCP converter.

### ◆ The Electricity Power Industry

1. Remote Meter Reading
2. Power monitoring
3. Streetlight monitoring
4. Meter monitoring
5. Control Room monitoring
6. Power distribution automation remote control systems

### ◆ Automatic monitoring system

### ◆ Vending Machines, ATM, POS

### ◆ The traffic Industry

1. Traffic instructions
2. Vehicle Park Guide
3. Expressway monitoring

4. Traffic lights control and photograph transmission

### ◆Water Industry

1. Water Monitoring
2. Water Meter Reading
3. Real-time transmission of the water supply network monitoring

### ◆Environment , meteorology, oil and other industries

1. Environmental protection of key pollution sources monitoring
2. Environmental monitoring
3. Meteorological monitoring

### ◆The noise real-time monitoring

### ◆Oilfield monitoring

### ◆Heating network monitoring

### ◆Coal monitoring

### ◆Seismic monitoring

### ◆All kinds device with RS232 serial port of the PLC, RTU wireless data transmission.

In one word, the GSM/GPRS/3G/4G IOT M2M Modem suitable for transferring data from device to internet, and transferring data from internet(Monitoring center or server) to device.

## 2.Safety Directions



### Safe Startup

Do not use cellular unit when using cellular equipment is prohibited or might bring disturbance or danger.



### Interference

All wireless equipment might interfere network signals of cellular unit and influence its performance.



### Avoid Use at Gas Station

Do not use the unit at a gas station. Power off cellular unit when it near fuels or chemicals.



### Power it off near Blasting Places

Please follow relevant restrictive regulations. Avoid using the device in blasting places.



### Reasonable Use

Please install the product at suitable places as described in the product documentation. Avoid signal shielded by covering the mainframe.



### Use Qualified Maintenance Service

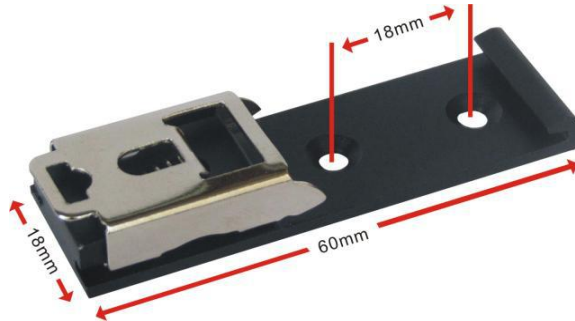
Maintenance can be carried out only by qualified maintainer.

### 3. Standard Packing List

GSM/GPRS/3G/4G IOT M2M Modem X1, GSM/3G/4G ANT X1, User Manual and Configurator X1(CD).

*Note: The package does not include any SIM card.*

**Optional:** 35mm Standard DIN rail fixed Bracket



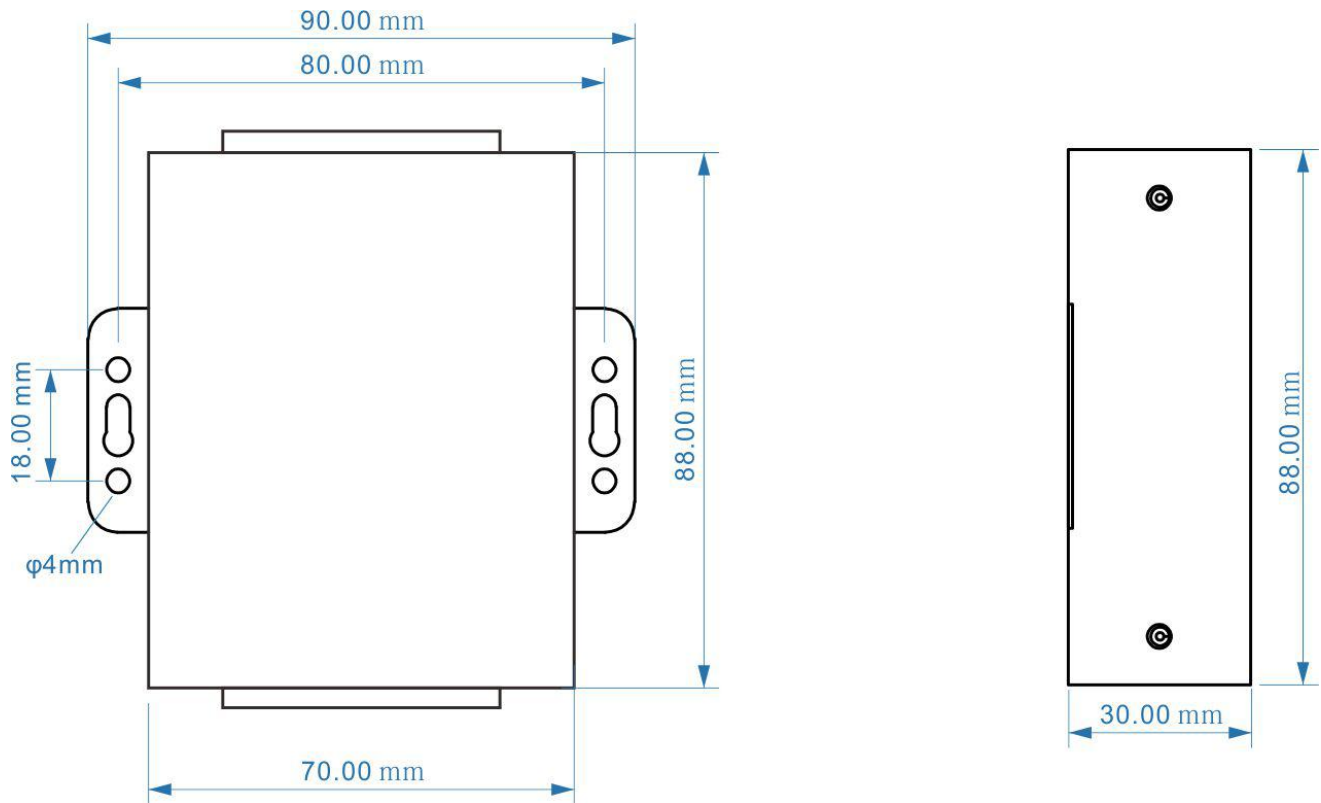
35mm DIN Rail Fixed Bracket

### 4. Mainly Features

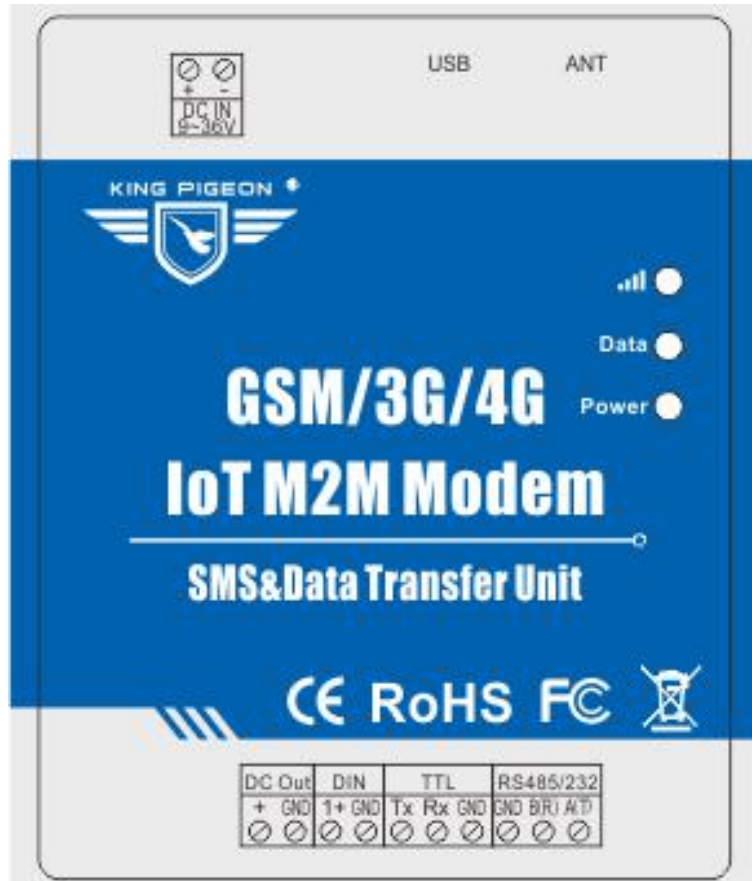
- Can be operated from anywhere, no distance limitation;
- Quad band 850/900/1800/1900Mhz GSM GPRS Module inside;
- 3G UMTS/HSDPA/4G Modules are optional.;
- Embedded 32 bit ARM9 MCU, reliable performance with in-built watchdog;
- Multi-functional, supports AT Commands, Transparent SMS and Data Transfer;
- 1 TTL port can be used for TTL device data transfer;
- 1 three-wire RS485 serial port, RS232 is optional, Baud rate adjustable from 1200~115200bps, ± 15KV ESD protection;
- 1 digital input, supports dry contact, wet contact, pulse counter can be used as alarm, or trigger to wakeup or online event;
- Powerful programmable features, supports programmable handshake message,etc;
- Real-time online data transfer, supports always only or event triggered online;
- Build-in protocol stack, support TCP/UDP network protocol;
- Support transparent data transfer and Modbus TCP protocol conversion;
- Heartbeat function and autodial to ensure the device online;
- Supports DNS and static data service center IP address;
- Supports wakeup by SMS, Call and Comport, Timer, Digital input or pulse counter input;
- Automatically restart the cellular module while communication failure, and resend the data in the cache, the cache capacity up to 12K bytes, also when cellular communication failure will alert by SMS text;
- Supports remotely restart the device, and configure it by SMS commands remotely;
- Up to 10 user's phone number to receive alarm and daily report SMS/Call;
- Industrial class design suitable for long time work applications;
- Support configure parameters, load profiles and upgrade the firmware via PC;
- Wall mount or 35mm standard DIN rail Design, convenient installation,
- Metallic cover, small size, exterior dimension is L70\*W88\*H30mm.

## 5. Physical Layout and Installation Diagram

### 5.1 Control Unit physical layout




### 5.2 Interface Instructions for installation







## Interface Instruction

12pin Connector Interface Definition	
<b>DC In 9~36V</b>	+, DC9~36V positive input, 1.5A, for power on the Unit;
	-, DC9~36V negative input, 1.5A, for power on the Unit;
<b>USB</b>	USB interface, used it to communicate with the computer.
<b>Antenna</b>	GSM Antenna, 50Ω SMA female interface
<b>DC Out 9~36V</b>	+,DC Power Positive output, the output voltage equal to DC Input voltage
	GND, DC Power Negative output
<b>DIN</b>	1+, Digital input, positive. Can be used as pulse counter input.
	GND, negative.
<b>TTL</b>	Tx, Transmit data port
	Rx, Receive data port
	GND
<b>RS485/RS232</b>	RXD/B-:Data serial port, RXD for RS232, Data/B- for RS485
	TXD/A+:Data serial port, RXD for RS232, Data A+ for RS485
	GND: Signal GND
LED Status Description	
	Cellular indicator, registering cellular Network flicks quickly, registered successful will 2seconds flick once.
<b>DATA</b>	Power On the Modem, the Led will flicks 1-2seconds. Then OFF stands for no data transmission over the Com port; ON stands for transmitting data over Com port.
<b>Power</b>	OFF stands for power off; ON stands for anomaly.

Any questions please help to contact us feel free.

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